Into, Through, and Beyond: A Framework to Develop Content-Based Material

By Donna M. Brinton and Christine Holten

The dedication of this issue of *Forum* to content-based instruction (CBI) is significant in that it recognizes CBI as an important instructional paradigm-not only in the ESL but also in the EFL context. To confirm the impact that CBI has had on second and foreign language teaching, one has only to look at the ESL/EFL commercial textbook market, or to survey the proceedings of second language teaching conferences (such as the annual TESOL Conference or its affiliate conferences). Not surprisingly, CBI's entry into these arenas has led to its inclusion in preparatory programs for teachers, with many TESOL Certificate or MATESOL programs today including courses that familiarize teachers with the basic precepts of CBI. Teacher educators have a wealth of materials to choose from here too, as a number of resource works have appeared over the last decade that provide new teachers with appropriate methodological foundations and training in this approach (Adamson 1993; Brinton, Snow, and Wesche 1989; Cantoni-Harvey 1987; Crandall 1987; Mohan 1986; Short, Crandall, and Christian 1989; Snow and Brinton 1997).

Yet for these new teachers, and for the many others who were trained before this approach appeared on the language teaching scene, the task of teaching language through content often remains an intimidating one. Central to all instructional efforts in CBI is providing access to content- regardless of what form this content takes (see Footnote 1 below). How to provide such access is perhaps the biggest challenge faced by the CBI practitioner, since the content materials that form the core of the CBI lesson are often derived from authentic sources, and tend to be at a level of conceptual and linguistic difficulty that seriously challenges the students' linguistic skills.

This article describes a lesson planning framework that CBI teachers can easily adapt to their instructional materials, student populations, and classroom settings. Applying the framework to an authentic reading passage about the future of our universe, the sample lesson illustrates how teachers can develop activities that supplement the content, increase student access to and comprehension of the core materials, and simultaneously foster students' linguistic skills (see Footnote 2 below).

Into, Through, and Beyond

One way of facilitating access to core content text is to apply an *into, through* , and *beyond* framework for CBI lesson planning. This lesson framework, originally adapted from The California Literature Project (Brinton, Goodwin, and Ranks 1994), involves a three-stage process designed to maximize students' comprehension and mastery of content:

1. ***Into:*** In the first stage of the lesson, students' prior knowledge about a concept is probed. Typical into activities include reviews of previously learned content, the use of content-related visuals, reaction journals, vocabulary previews, free association or visualization exercises, and anticipation reaction guides to assist students in accessing the new content material. The end goal of this stage is for students to gain an entree into the topic, recognize the depth of their own prior knowledge, and be better prepared for the new content materials they are about to encounter.
2. ***Through:*** In the second stage, students encounter the new content, relating it to their discussions of the concepts during the into stage. This may entail confirming or rejecting the hypotheses they formed, or expanding their knowledge base with new facts, ideas, or opinions. Activities that are typically found in this lesson stage include grammar development or vocabulary expansion, reading guides (e.g., idea sequencing and/or text completion exercises), and information gap tasks (such as jigsaw reading). *Through* activities also include a variety of text explication exercises, either oral or written. The end goal of this stage is for students to practice new language skills while demonstrating their comprehension of the basic concepts.
3. ***Beyond:*** In the final stage of the framework, students further demonstrate their comprehension by creatively applying their new knowledge. Such application may take several forms: application of the knowledge to personal experience, to an example, to a literary passage, etc. *Beyond* activities involve more extended oral and written output such as role-plays, debates, and essays. The end goal of this stage is for students to demonstrate both conceptual and linguistic mastery, and to provide a forum for communicative language practice.

The Framework Applied: What is the Future of Our Universe?

The following example illustrates the application of the *into*, *through* , and *beyond* framework to a CBI unit involving basic science content. Specifically, the unit, which is designed for middle school students in a sheltered content class, deals with the beginnings and the future of our universe. To better illustrate how the framework can be applied, we outline a number of possible unit activities. To provide readers with a broader range of task types, we have intentionally included more activities than would be appropriate with any one CBI class. We recommend that teachers choose at most two or three activities at each stage, keeping in mind that their ultimate goal is for students to comprehend the concepts, gain mastery over new language items, and be able to present and analyze these concepts using their burgeoning linguistic skills. Figure 1 presents an overview of the activities.

The Into Phase

In a CBI framework, *into* activities generally take as their point of departure a brief review of already- learned material. In this manner, the teacher can ascertain whether students have sufficient command of both the necessary language skills and the concepts to proceed to the next step of the lesson. The students in the middle school classroom for whom these materials are

designed have previously learned about the "big bang" theory of the creation of the universe. In the next segment of the lesson, they are about to read a text dealing with two opposing theories of the future of the universe. The following activities are suggested in this phase:

Activity #1: Oral review
The teacher begins the lesson by showing students a handful of popcorn kernels, and asking them to use the analogy of popping corn to explain the big bang theory of the universe. (She may ask, for example, "How is popping corn similar to the beginning of the universe?") This activity may be done as a small group discussion, with each group receiving popcorn kernels and using them as a hands- on demonstration of how the big bang may have occurred. Alternatively, it may be conducted as a teacher- led discussion, with individual students volunteering information and the teacher charting this information on the chalkboard.

Activity #2: TPR demonstration
Moving chairs and desks aside to clear space in the center of the classroom, the teacher designates the center of the classroom as the "center of the universe" and asks for student volunteers to take part in a total physical response (TPR) demonstration of the conditions that might have led to the big bang. To enhance the activity, the teacher can prepare name tags or small signs to hang around the necks of the students indicating galaxies that the students are already familiar with (e.g., Andromeda, the Milky Way, the M-8 Galaxy). Several different students can wear the same tags, since they can represent different stars in a given galaxy. The student volunteers gather in the center of the universe, with the teacher encouraging them to huddle together very closely. She then tells them to imagine that it is getting hotter and hotter in the center of the universe, and asks them if they feel comfortable. When they answer in the negative, she then asks them whether they would feel more comfortable if they were further apart, and encourages them to move away from the center and find another location to stand. Students should be encouraged to move in the same direction as other stars in their galaxy, and to form concentrations within a galaxy. The activity is followed by class discussion of what occurred, and how gravity as a force figures in the movement of the various stars.

Activity #3: Sentence strip sequencing
To orally review the main ideas of the big bang theory, the teacher prepares index cards listing key events in the beginning of the universe. Assembled, these sentences should provide a summary of the big bang theory, using vocabulary that students are familiar with from the content area reading passage. For example:

- Fifteen billion years ago, matter and energy were concentrated in one place.
- It was really hot in this place.
- Because it was so hot, an explosion happened.
- This explosion is known as the "big bang."
- Because of the force of gravity, this matter formed clusters called galaxies.
- Even today, these galaxies continue to race away from the center of the universe.

The teacher again asks for volunteers and distributes the index cards randomly to six students. She asks these students to assemble in a circle in the middle of the classroom and has each student read his/her sentence aloud so that everyone can hear it. She then asks students to read

the sentences again and to reorder themselves so that the sentences are in the correct sequence. Following the sequencing activity, students can be asked to write their sentences on the chalkboard in the order they have determined to be correct.

Activity #4: Jigsaw reading
Using cooperative learning techniques, students can next be grouped into expert groups "A" and "B" to answer prepared comprehension questions (see Appendix 1 below for an example). Students should be encouraged to work with a partner or in a small group and use the information in the content reading to complete either Worksheet A or B; following completion of the worksheet, students are re-paired or re-grouped to complete Worksheet C, the cooperative summary worksheet. For homework, they can then be assigned to read the entire passage.

Activity #5: Journal entry or quick write
Either as an in-class quick write or as a homework assignment, students are asked to write on one of the following topics:

- How do you think the world will come to an end?
- In your culture, is there a myth about the end of the world? Tell this myth.

If desired, the teacher can have students share their responses in a read-around group, or display copies of the students' work on a bulletin board. This activity foreshadows the concepts that students are about to encounter in the next phase of the lesson, where they learn about the two theories of how the universe will end.

Activity #6: Chalkboard cluster
Like activity #5, this activity begins to set the stage for the new material that students are about to encounter. The teacher begins by placing a large circle in the center of the board and labeling this "the universe." She then draws spokes extending outward from the circle, and asks students "What can you tell me about the universe?" As students volunteer information, the teacher writes this information next to the outward-extending spokes. For example, students may volunteer information such as "The universe is infinite" or "There are billions of galaxies in the universe." This activity can continue until students' knowledge is exhausted, but may require prompting on the part of the teacher. For example, if information on the size of the universe is not forthcoming, the teacher can prompt this by asking questions such as "How large is the universe?", etc.

Activity #7: Poster design
A final cooperative activity to round out the *into* phase is one that asks students in pairs or small groups to design a poster providing a visual answer to the question "Where are you in the universe?" Useful resources for this activity are glue, scissors, old magazines, markers, yarn or ribbon, assorted stickers, etc. Once students have designed the posters and put the finishing art touches on them, they can be hung around the classroom "gallery fashion." Students can then be asked to orally present their poster and explain their ideas. Appendix 2 below illustrates one such student poster.

The Through Phase

Prior to this phase of the lesson, students have either 1) reviewed previously studied materials or 2) tapped into their existing knowledge about the concepts that are about to be studied. It is in the *through* phase of the lesson where students encounter new material and engage the concepts and linguistic features contained in this new material. In the lesson being used here to illustrate the framework, students are about to encounter two contrasting theories about the future of the universe-one proposing that the universe will continue to expand and the other proposing that the universe will begin to contract and eventually return to the total nothingness from which it evolved. Although much of the vocabulary is already familiar from the previously studied material, there is important new key vocabulary for students to learn as well as new concepts which they must comprehend and be able to explain using their own language. It is therefore important to guide students carefully through this phase of the lesson, providing lots of built-in support (both conceptually and linguistically) through activities of the following sort:

Activity #1: Visual demonstration

Beginning the *through* phase with a hands-on activity, the teacher prepares a visual demonstration of the expanding vs. contracting universe by using a colored marker and drawing a series of concentric rings on a balloon to represent galaxies. At the center of each ring, she depicts a larger dot representing the center of the galaxy. She then asks students to watch what happens to the galaxies as she blows up the balloon, and as she lets the air back out again. She prompts students: "In which case do the galaxies get further apart from each other?" "In which case do they get closer together?" She uses this opportunity to expose students to the central terms from the new unit, i.e., "open" or "expanding" universe and "closed" or "contracting" universe, writing these key terms on the board and again demonstrating them using the balloon visual. If desired, she can pass out balloons and markers to pairs or small groups of students and allow them to make their own visual demonstration.

Activity #2: Hypothesis building

Given the complexity of many CBI readings, it is essential for the lesson's success to include pre-reading activities before students engage new text materials. One method for doing this involves extracting key information from the text and getting students to sort this information into predetermined categories. For example, given the content of the sample reading (which details two contrasting theories of the future of the universe), the teacher might divide the chalkboard into two columns labeled "open universe" and "closed universe." To one side of these columns, she would affix post-it notes on which are written simplified main ideas from the reading. For example:

- The universe will get bigger.
- The universe will get smaller.
- The stars will keep their energy.
- The stars will lose their energy.
- The galaxies will move away from each other.
- The galaxies will move toward each other.

She would then ask students to come to the front of the class and make "guesses" about which type of universe is being described by placing each post-it note in the appropriate column (see Appendix 3 for the sample chalkboard layout).

Activity #3: Active listening
Students can next confirm the hypotheses they have made by listening to the teacher present an informal mini-lecture on the topic of open vs. closed universes. For example, they might hear:

Many scientists believe in the theory of an open or expanding universe. In an open universe, the galaxies move away from each other, and the universe gets larger and larger. Eventually, the stars begin to lose their energy. At the end of the open universe, the stars lose all their energy and the result is total emptiness. However, not all scientists believe this theory. Other scientists believe in a closed or contracting universe. In a closed universe, the galaxies move closer together, and the universe gets smaller and smaller. The stars keep their energy. Eventually, they come together, and the result is total togetherness.

In the case of incorrect hypotheses, the teacher might ask students to come back up to the chalkboard and rearrange the post-it notes to correctly represent the two scientific theories.

Activity #4: Reading guide
Now that the key vocabulary has been introduced and students are familiar with some of the core concepts, they can work with the reading to further develop their language mastery and concept comprehension. A reading guide such as the one in Appendix 4 allows students to scan the text and locate additional key information without the pressure of understanding every word or grammatical structure in the text. Such activities provide the needed structure for students to better comprehend a conceptually and linguistically complex text. This activity is best done as pair work since the teacher can circulate around the class as students work and answer any questions that arise.

Activity #5: Vocabulary development
In activity 4, the reading guide serves to assist students in comprehending the text. However, in CBI classes, it is important to remember that language development, not concept mastery, is the primary goal. Vocabulary enrichment is one important part of language skills work in CBI classes. Often, the particular language that is the lesson focus grows out of the content itself, as is the case with the vocabulary development activity in Appendix 5 below. This activity has students work with the differences between oral or informal language and academic register.

Activity #6: Guided summary
As a follow-up step to activity 5, students can be asked to use the new vocabulary appropriately to complete a guided summary (see Appendix 6 below).

Activity #7: Poster design
An appropriate activity to complete the *through* phase and to allow students to demonstrate concept mastery is to have students visually represent either an open or closed universe on butcher paper or poster board. As in the *into* phase of the unit, the student representations can be displayed on the classroom walls and students can be asked to explain their diagram to the class.

The Beyond Phase

The final phase of the framework, appropriately designated as the *beyond* phase, directs students to apply the knowledge they have gained and use language creatively to express themselves on the topic. The following are possible extension activities relating to the open vs. closed universe theories:

Activity #1: Silent dialog
Silent dialogs are in-class paired writing activities that ask students to assume a role (see Appendix 7 for sample role cards) and carry on a "silent" conversation on paper. Seated so that they cannot see what their partner is writing, the students pass a piece of paper back and forth, each time writing a line of the conversation. When finished, they can be asked to either hand the conversations in to the teacher or perform them live for other members of the class.

Activity #2: Retrospective discussion
This activity refers students back to their journal entry from the *into* phase in which they described their view of the end of the universe. Retrospectively, student groups are asked to characterize each member's views as either belonging to an open or closed view of the universe. An additional step in this activity might involve an assignment in which students individually are asked to rewrite their journal entry, incorporating their newly-acquired knowledge of scientific theories.

Activity #3: Post-unit creative writing
A creative writing alternative to activity 2 asks students to read a creation myth (see Appendix 8 below for a sample myth) and then write a parallel myth describing how this universe comes to an end. Again, students must decide if the end of this universe will follow the open or closed universe theory. Student products can either be presented orally to the entire class or displayed in their written form on bulletin boards.

Conclusion

Students in CBI classes often lack the cognitive academic language proficiency needed to process and express content area concepts (Cummins 1992). The task of the CBI teacher is to expose students to appropriate content designed to further their linguistic skills and to render the core concepts of the CBI lesson accessible through language enrichment activities. This task involves sophisticated adaptation techniques and strategies; for many teachers, it may entail a rethinking of how to present material to students. The *into, through* , and *beyond* framework is one method that many teachers have found useful in this endeavor. We hope that the examples given in this article suffice to give readers of the *Forum* an idea of how this framework can help them with their own students, settings, and instructional materials.

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Figure 1

INTO	THROUGH	BEYOND

Oral review: How is the big bang theory similar to popping popcorn?	**Visual demonstration:** Building schema using balloons	**Silent dialog:** Spontaneous written debate between two astronomers with opposing theories about the origins and the end of the universe
TPR demonstration: The formation of galaxies and the force of gravity	**Hypothesis building:** Open vs. closed universe (post-it note activity)	**Retrospective discussion:** Review of journal entry "How will the world come to an end?"
Sentence strip sequencing: The big bang (part 1)	**Active listening:** Hypothesis checking	**Creative writing:** Creation myth plus speculation on how this "world" will come to an end
Jigsaw reading: The big bang (part 2)	**Reading comprehension:** Open vs. closed universe	
Journal entry/quick write: How will the world come to an end?	**Vocabulary development:** Finding synonyms	
Chalkboard cluster: What do you already know about the universe?	**Guided summary:** Open vs. closed universe	
Poster design: Where are you in the universe?	**Poster design:** Open vs. closed universe	

Figure 1. Overview of the activities accompanying "What is the Future of our Universe?"

Footnote 1

1. Content in CBI most often takes the form of a central reading passage or passages. However, since CBI by definition entails the teaching of multiple skills, related listening, speaking, and writing tasks also need to be planned into the CBI lesson framework.

Footnote 2

2. The reading upon which these activities are based was taken from a middle school science textbook. This content is chosen for illustration purposes only. It is our hope that, assisted by the activities we outline, teachers facing the challenge of CBI can apply the framework to their own content materials to more effectively teach language through content.

Appendix 1

Appendix 1: Jigsaw reading worksheets

The Big Bang Theory

Astronomers believe that the expanding universe is the result of an enormous and powerful explosion called the Big Bang. The Big Bang theory may explain how the universe formed. The Big Bang theory states that the universe began to expand with the explosion of concentrated matter and energy and has been expanding ever since. According to the theory, all the matter and energy in the universe was once concentrated into a single place. This place, of course, was extremely hot and dense. Then some 15 to 20 billion years ago, an explosion-the Big Bang-shot the concentrated matter and energy in all directions. The fastest moving matter traveled farthest away. Energy too, began moving away from the area of the Big Bang.

If the Big Bang theory is correct, the energy left from the Big Bang will be evenly spread out throughout the universe. This energy is known as background radiation. And indeed, scientists have discovered that the background radiation is almost the same throughout the entire universe. This constant background radiation is one observation that supports the Big Bang theory.

After the initial Big Bang, the force of gravity began to affect the matter racing outward in every direction. Gravity is a force of attraction between objects. All objects have a

gravitational attraction. This force of gravity began to pull matter into clumps.

At some time, the clumps formed huge clusters of matter. These clumps became the galaxies of the universe. But even as the galaxies were forming, the matter inside the galaxies continued to race away from the area where the Big Bang had occurred. And this is just what astronomers have discovered. All of the galaxies are speeding away from the center of the universe.

Maton, et al; Prentice Hall Science: Exploring the Universe, Englewood Cliffs, NJ:Prentice-Hall, Inc. © 1994, 1993.

The Big Bang Theory-Worksheet A

Task: Look in your science book on page 25 in the section titled "The Big Bang Theory" to find the answer to these questions:

1. How many billions of years ago did the Big Bang happen?

_____

2. At the beginning of the universe, what was concentrated in one place?

_____

3. What was it like in this place?

_____

4. What happened to the matter and energy in this place?

_____

5. Why is it important to know the Big Bang theory?

_____

The Big Bang Theory-Worksheet B

Task: Look in your science book on page 25 in the section titled "The Big Bang Theory" to find the answer to these questions:

1. Where is the energy that is left after the Big Bang? What is it called?

_____

2. What is gravity?

_____

3. What did gravity do to the matter left after the Big Bang?

_____

4. How were the galaxies formed?

_____

5. In what directions are the galaxies moving today?

_____

The Big Bang Theory-
Cooperative Summary Worksheet 3

Task: You and your partner have both read some information about the big bang theory. Each one of you has different information. Use the information that you have to complete the following summary of the big bang theory.

Astronomers believe _____called the Big Bang formed the universe. The Big Bang took place _____years ago. At this time, all matter and energy in the universe was located _____. This place was very _____. Because of these conditions, the matter and energy in this place _____. The force of the _____ caused matter and energy to _____. The fastest moving matter traveled the farthest. The energy left over from the Big Bang _____ and it is called _____. After the Big Bang, the force called _____ began to affect the matter. It began to make the matter form _____. These clumps of matter formed what we now call _____. The galaxies kept on moving and even today they are moving in a direction that is _____ the center of the universe.

Appendix 2

Appendix 2: Sample student poster

An Open Universe

Most astronomers feel that the Big Bang theory leads to two possible futures for the universe. Perhaps the galaxies will continue racing outward. In this case, the universe will continue to expand. Such a universe is called an open eternal universe. But eternal does not mean "forever" when it comes to the universe. In an open universe, the stars will eventually die off as the last of their energy is released. So the future of an open universe is one in which there will be nothing left. An open universe leads to total emptiness. But even if the universe is open, its end will not occur for many billions of

years.

A Closed Universe

Most astronomers do not feel that the universe will become an open universe. They suspect that the gravitational attraction between the galaxies will one day cause their movement away from each other to slow down. The expansion of the universe will finally come to a halt. Then gravity will begin to pull the galaxies back toward the center of the universe. When this happens, every galaxy will begin to show a blue shift in its spectrum. Recall that a blue shift means that a galaxy is moving toward the Earth.

As the galaxies race back toward the center of the universe, the matter and energy will again come closer and closer to the central area. After many billions of years, all the matter and energy will once again be packed in to a small area. This area may be no larger than the period at the end of this sentence. Then another big bang will occur. The formation of a universe will begin all over again. A universe that periodically expands and then contracts back on itself is called a closed universe. In a closed universe, a big bang may occur once every 80 to 100 billion years.

Appendix 3

Appendix 3: Open vs. Closed Universe chalkboard layout	
Open Universe	Closed Universe
The galaxies will move away from each other.	The galaxies will move toward each other.
The universe will get bigger.	The universe will get smaller.
The stars will lose their energy.	The stars will keep their energy.
Eventually, the stars will die.	Eventually, the stars will come together.
The result will be total emptiness.	The result will be total togetherness.

Appendix 4

Appendix 4: Reading comprehension guide

Task: Read through the section in your text about open and closed universes. Then, circle the appropriate answer in the box next to each statement.

Statement	Open Universe	Open Universe
1. The universe will continue to expand.	yes no don't know	yes no don't know
2. Galaxies will continue moving away from the center of the universe.	yes no don't know	yes no don't know
3. Stars will die.	yes no don't know	yes no don't know
4. There will be total emptiness.	yes no don't know	yes no don't know
5. Another big bang will occur.	yes no don't know	yes no don't know

Appendix 5

Appendix 5: Vocabulary development

Task: Turn to page 25 in your textbook. Find the synonyms (words or phrases that mean the same as the words below) and write them in the space provided.

Finding Synonym

guess _____ get bigger _____
move quickly _____ get smaller_____
let go of _____ nothing _____
stop _____

Appendix 6

Appendix 6: Guided summary

Task: Complete the guided summary using the new words you have learned in this lesson.

Guided Summary: Open and Closed Universes

When astronomers think about the future of the universe, they _____ that the big bang may lead to two possible futures. The first future is called the open universe. In this case, scientists believe that the universe will continue to _____ and that the galaxies will continue to _____ away from the center of the universe. But this is not the end of this type of universe. Eventually, the stars will _____ their energy and die off. Eventually, there will be _____. In the second possible future, scientists believe that the expansion of the universe will _____ and that then the universe will begin to _____.

Appendix 7

Appendix 8: Sample silent dialog role cards

Role card #1: You are an astronomer. You believe in an open universe. Your colleague disagrees with you. You want to convince him/her of your view. You begin the dialog!

Role card #2: You are an astronomer. You believe in a closed universe. Your colleague disagrees with you. You want to convince him/her of your view.

Appendix 8

Appendix 9: Sample creation myth

The Great Cosmic Egg-Chinese Creation Myth

At first there was a great cosmic egg. Inside the egg was Chaos, and floating in Chaos was P'an Ku, the

Undeveloped, the divine Embryo. And P'an Ku burst out of the egg, four times larger than any person today, with a hammer and a chisel in his hand. He used the hammer and chisel to fashion the world. Two great horns grew out of his head; two long tusks grew from his upper jaw, and he was covered with hair.

P'an Ku went to work at once, mightily, to put the world in order. He chiseled the land and sky apart. He piled up the mountains on the earth and dug the valleys deep, and made the rivers. He placed the sun and moon and stars in the sky; below he placed the four seas. He taught people to build boats and showed them how to throw bridges over rivers, and he told them the secrets of the previous stones.